

OUTLINE:

IGS BURNER EVALUATION REPORT

1.0 INTRODUCTION

- A. Reasons for the Burner Evaluation [Operational, Maintainability, and Performance Concerns]

2.0 BACKGROUND

- A. IGS Unit Information
- B. IGS Burner History (Boiler acceptance- performance vs vs cooling air requirements, resulting operating damage)
- C. Utility Experience with Burners
 - 1. Typical Burner Life
 - 2. Normal Instrumentation and Control
 - 3. Typical Cooling Air Requirements and Life Expectancy

3.0 BURNER INSPECTION [Discuss just the facts]

- A. Major Physical Observations
 - 1. [list in order of priority (perf & dollar impact)]
 - 2. " "
 - 3. " "
- B. Summary of Inspection Information [table showing frequency of occurrence]
- C. Conclusion of Burner Conditions based upon Inspections [The Mechanical Reasons for the Physical Problems and Estimated Remaining Life]

4.0 BURNER EVALUATION

- A. Existing Burner Conditions
 - 1. Correlation of Observations to Design & Operationing Information
- B. Metal Temperature Limitations/ Material Integrity
 - 1. Stainless Steel
 - 2. Carbon Steel (Nozzle, Air Registers & Linkages, etc.)
 - 3. Burner Life vs Operating Temperature
 - 4. Acceptable O/S Cooling Air Temperatures
 - 5. Estimated Burner Life at Various Operating Conditions
- C. Cooling Air Requirements
 - 1. Cooling Air Requirements
 - 2. Methods of Measurement
- D. Performance Penalty
- E. Air Leakage Losses around Burners

4.0 BURNER EVALUATION -continued

F. Additional Concerns:

1. Two set-point outer register settings due to the outside I/S burners having low air flow while the inside O/S burners are starved for cooling air
2. Controllability with existing registers
3. Eyebrow problems (operational concerns)
4. Scanner problems (discrimination, 2nd scanner)
5. Burner performance and rangeability (turndowns)
6. Burner line fires and adequate PA velocity
7. Adequate monitoring information
 - a. Individual windbox sec. air flow measurement
 - b. Burner differential pressure

5.0 B&W'S REPAIRS TO BURNERS

A. Recent Repairs

1. Throat Sleeve Casing Ring

B. Previous Repair History

1. HD Outer Air Register and Linkages
2. Coal Nozzle Tip (extension with Stainless Steel)
3. Trimming Register Doors
4. Free Floating Outer Register Assembly

6.0 ALTERNATIVES

[Analysis to include: Options (Adv and Disadv)]
Operational Evaluation
Maintenance Requirements
Life Estimation
Performance Impact
Full Economic Analysis
Cost Breakdown Summary
Schedule for Repairs

- A. Do Nothing (Operate at O/S 1350 F, repair major problems)
*[Multiple burner replacements (every 5-7 years)]
- B. Change Mode of Operation;
 1. Drop O/S temp to 1150 F & repair major problems
 2. Operate with all 48 burners I/S (None O/S)
 - a. Pulverizer Maintenance Considerations
*[Burner life 10-12 yrs vs economic penalties]
- C. Rebuild burners to new condition with modifications to existing design & operate at 1150 F O/S
*[Burner life 30 yrs vs performance impact]

6.0 ALTERNATIVES -continued

D. Replace burners with new design (1350 F O/S)

1. Redesign Considerations

- a. All S.S. material & thickness
- b. New outer register design and setback
(change focal point)
- c. Inner air register linkage redesign
- d. Carbon steel replacement to stainless
(coal nozzles, etc.)
- e. On-line register control

*[Burner life 30 yrs with no economic impact]

7.0 RECOMMENDATIONS & CONCLUSIONS

- A. Best Alternative- Burner Replacement & Redesign
- B. Interim solution (reduce cooling air requirements)
- C. Additional Instrumentation & Controls

8.0 APPENDIXES

- A. Burner Inspection Sheets
- B. Photographs
- C. Weld Decay
- D. Typical Burner Operating Conditions
- E. Future IGS Outage Schedule